WHAT IS CLAIMED IS:

1. A compound of the formula:

$$(F)_m G (R)_n$$

wherein

each R is a group comprising at least one carbon, nitrogen, phosphorus or sulfur atom and G is joined to R through said carbon, nitrogen, phosphorus or sulfur atom;

G is silicon or boron;

m is 2 to 5 and n is 1 to 3 with m + n = 3 to 6 when G is silicon;

m is 1 to 3 and n is 1 to 3 with m + n = 3 to 4 when G is boron;

and wherein the compound further comprises one or more counterions when the above formula is charged; and wherein at least one F is ^{18}F.

2. The compound of claim 1 wherein one or more counterions are present when m + n = 5 or 6 and G is Si and when m + n = 4 and G is B;.

3. The compound of claim 1 or 2 wherein G is silicon.

4. The compound of claim 3 wherein at least two of F are ^{18}F.

5. The compound of claim 3 or 4 wherein:

(i) m = 2, n = 3;

(ii) m = 4, n = 1;

(iii) m = 5, n = 1;

(iv) m = 2, n = 2;

(v) m = 3, n = 1; or

(vi) m = 3, n = 2.

6. The compound of claim 5 wherein:

(i) m = 2 and n = 3;

(ii) m = 4 and n = 1; or

(iii) m = 5 and n = 1.

7. The compound of claim 5 wherein m = 4, n = 1.

8. The compound of claim 1 or 2 wherein G is boron.

9. The compound of claim 8 wherein:

(i) m = 1, n = 3;

(ii) m = 2, n = 2;

(iii) m = 3, n = 1;

(iv) m = 1, n = 2; or

(v) m = 2, n = 1.

10. The compound of claim 9 wherein:

(i) m = 1 and n = 3;

(ii) m = 2 and n = 2; or

(iii) m = 3 and n = 1.

11. The compound of any one of claims 1 to 10 wherein each R is joined to G through a nitrogen or carbon atom.

12. The compound of any one of claims 1 to 10 wherein each R is joined to G through a carbon atom.

13. The compound of any one of claims 1 to 7, 11 and 12 wherein G is silicon and at least one R is selected from the group consisting of: aryl, amino, methyl, phenyl, aminophenyl, aminomethylphenyl, alkoxymethylphenyl, a porphyrin, a porphyrin derivative and a biomolecule.

14. The compound of any one of claims 1, 2 and 8-12 wherein G is boron and at least one R is selected from the group consisting of: amino, phenyl, methyl, pyrromethine, aminophenyl, aminomethylphenyl, phenyl benzimideazole, 8-naphthalenedialkylboranyl, and a biomolecule.

15. The compound of any one of claims 1 to 14 wherein at least one R is a moiety capable of bonding to a biomolecule.

16. The compound of any one of claims 1 to 15 wherein at least one R is a biomolecule.

17. The composition of claim 16 wherein the biomolecule is a sugar, a peptide, a nucleic acid or derivative or analog thereof.

18. The compound of claim 16 wherein the biomolecule is a hormone, somatostatin, growth hormone, VEGF, EGF, an antibody, a breast cancer antigen specific antibody, a prostate cancer antigen specific antibody, a melanoma antigen specific antibody, a ligand, a RGD-motif ligand recognizing a matrix metalloprotease, an aptamer, an aptamer recognizing a cell surface protein, folic acid, a folic acid derivative and a methotrexate or a derivative or analog thereof.

19. A compound according to any one of claims 1, 2, 3 and 5 to 18 comprising more than one ^{18}F atom.

20. A compound according to any one of claims 1 to 19 comprising at least one ^{19}F atom.

21. A composition comprising two or more different compounds each according to any one of claims 1 to 20.

22. A composition comprising at least one compound according to any one of claims 1 to 20 and at least one compound of formula

$$(F)_m G (R)_n$$

wherein R, G, M and n are as defined and F is a naturally occurring fluorine isotope.

23. The composition of claim 22 wherein the naturally occurring isotope is ^{19}F.

24. The composition of any one of claims 21 to 23 further comprising a physiologically acceptable carrier or excipient.

25. A method of preparing a positron emitting compound comprising fluorinating a compound of the formula

$$(L)_q\ G\ (R)_n$$

with ^{18}F to produce a compound of the formula:

$$(F)_m\ G\ (R)_n$$

wherein each L is the same or different and is a leaving group capable of being displaced by fluorine, R, G, m and n are as defined in any one of claims 1 to 16, q is 1 or 3 when G is boron and q is 2 or 3 when G is silicon, and wherein at least one F is ^{18}F.

26. The method of claim 25 wherein said fluorination is by $H^{18}F$, $KH^{18}F_2$, or a tri- or tetra-alkyl ammonium salt of $^{18}F^-$.

27. The method of claim 25 or 26 wherein at least one R comprises a moiety capable of forming a bond with a biomolecule.

28. The method of claim 27 wherein the moiety is capable of forming the bond in aqueous conditions at about pH 3.0 to about pH 7.5.

29. The method of any one of claims 25 to 28 performed at about pH 3.0 to about 9.0.

30. The method of claim 29 performed at about pH 7.0.

31. The method of any one of claims 25 to 30 additionally comprising the step of reacting the compound with a biomolecule.

32. The method of claim 31 wherein the reacting step is performed before fluorination.

33. The method of any one of claims 27, 28, 31 or 32, wherein the biomolecule is a sugar, a peptide, a nucleic acid or derivative or analog thereof.

34. The method of any one of claims 27, 28, 31 or 32, wherein the biomolecule is selected from the group consisting of: a hormone, somatostatin, growth hormone, VEGF, EGF, an antibody, a breast cancer antigen specific antibody, a prostate cancer antigen specific antibody, a melanoma antigen specific antibody, a ligand, a RGD-motif ligand recognizing a matrix metalloprotease, an aptamer, an aptamer recognizing a cell surface protein, folic acid, a folic acid derivative and a methotrexate, or a derivative or analog thereof.

35. The method according to any one of claims 25 to 34 wherein G is Silicon and L is selected from the group consisting of: -OH, $-O^-$, O-alkyl, O-aryl, pinacol, O-pyridyl, O-nitrophenyl, a silanized silicate, a triol presenting saccharide, a triol presenting silicate, and an alcohol presenting solid support.

36. The method according to any one of claims 25 to 34 wherein G is boron and L is selected from the group consisting of –OH, O-alkyl, O-aryl, pinacol, O-pyridyl, O-nitrophenyl, diol presenting saccharides, and an alcohol presenting solid support.

5